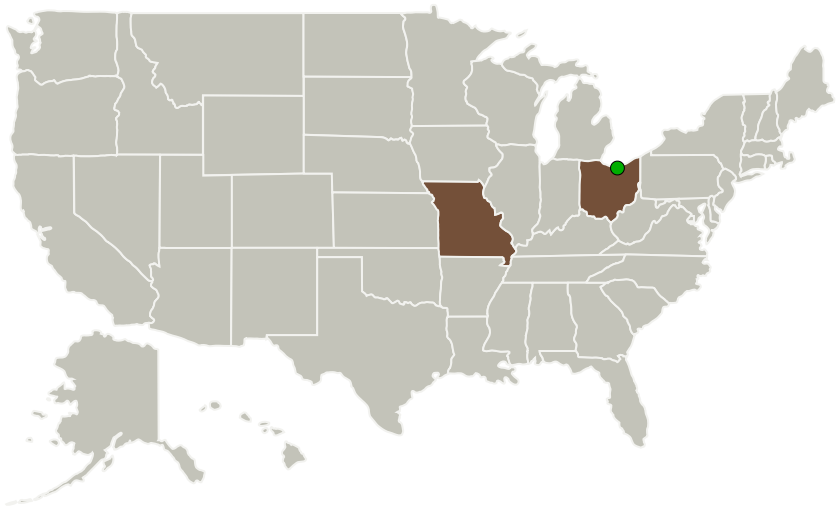
Development of Hermetic Sealing Glasses for Solid Oxide Fuel Cells, Phase I

Completed Technology Project (2014 - 2014)

Project Introduction

Sealing glasses, either rigid glass-ceramics or viscous, non-crystallizing compositions, will be developed and sealing processes will be optimized based on NASA's solid oxide fuel cell (SOFC) designs. SOFC design constraints, including material selection and operational conditions, will guide compositional development, and then these new compositions will be used for long-term (>500 hours) material compatibility tests under SOFC operational conditions. Prototype seals will be produced and will be thermally cycled between room temperature and 850°C to test the thermo-mechanical compatibility of the sealing materials with SOFC components. At the end of this Phase I project, sealing compositions and processes will be identified for SOFC applications identified by NASA.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Mo-Sci Corp	Lead Organization	Industry	Rolla, Missouri
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Mo-Sci Corp

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

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Primary U.S. Work Locations	
Missouri	Ohio

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137786)*

Images

Project Image

Development of Hermetic Sealing Glasses for Solid Oxide Fuel Cells Project Image
(https://techport.nasa.gov/image/133073)

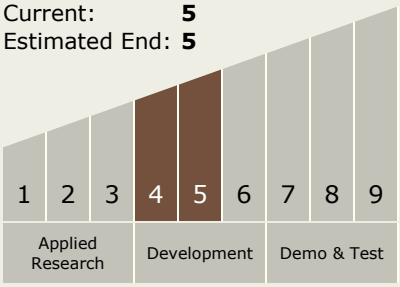
Project Management *(cont.)*

Principal Investigator:

Cheol-woon Kim

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.4 Dynamic Energy Conversion

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System